State of New Jersey
Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

Mr. Cristopher Anderson
Director Environmental Affairs
L.E. Carpenter & Company
Suite 36-5000
200 Public Square
Cleveland, OH 44114-2304

OCT 13 2000

Dear Mr. Anderson:

Re: L.E. Carpenter Superfund Site
Wharton, Morris County

The New Jersey Department of Environmental Protection (Department) and EPA have reviewed the Work Plan to Evaluate Additional Technologies to Enhance On-Site Free Product Recovery dated August 15, 2000 and have the following comments:

Department's Comments

1. RMT suggests that since natural attenuation is occurring and no apparent receptors are being impacted as a result of contaminated ground water, the current free product recovery system should be allowed to operate indefinitely. While the length of time it would take to remove the free product using the current system was a factor, the Department and EPA also requested that L.E. Carpenter evaluate additional technologies because the EFR system is incapable of removing more than a fraction of the total free product beneath the site.

2. Please note that a permit-by-rule must be issued by the Department prior to a pilot test being conducted. In addition, an air permit may be required.

EPA's Comments

3. Additional information is required on the proposed drilling activities. This additional information should include, at a minimum, the following: a) the location and total depth of borings; b) basic details of drilling methods (whether hollow stem auger or other method); c) how boreholes will be logged (whether continuous split spoon, spaced, etc.); d) well construction details, including materials to be used, annulus materials and screen intervals, etc. Note that some of this information was provided for the MPE well, but it was not complete and no such information was provided for any of the other wells and monitoring points.

4. The text stated that existing monitoring wells "would be utilized" and other more distal wells "may be monitored." With regards to frequency of monitoring, the text states only that it will occur "before, during, and after the test at regular intervals." Obviously, adequate evaluation of testing results depends upon the information obtained via a well thought out monitoring program. The details on which wells will be monitored along with the parameters to be measured at each point, type of equipment used for monitoring, and frequency of monitoring should all be provided up front in the work plan.

5. The work plan should include a discussion and details regarding how extracted materials will be treated, stored and disposed of, as well as any relevant figures showing the process. At present the document states only that product would be temporarily stored, but not where or for how long a period. The document also states that ground water would "likely be treated...with appropriate technology," as per Page 6, however, no further information is provided on the details. Lastly, a plan for monitoring and treating vapor phase should also be included.

6. Regarding the proposed steam injection testing, this technology has the potential to mobilize volatile compounds both into soil vapor and to the surface. Because of this, soil vapor monitoring for VOCs should be included in this portion of the testing as well as during the chemical oxidation phase.

7. With respect to the chemical oxidation pilot test, it is recognized that pilot testing is intended only as a "conceptual design," and that a separate work plan will presumably be prepared, if necessary, based on the results of the bench testing. Injection well construction and similar details will be discussed at that time, however, the plan made a point to state that black iron would be used. Please note that use of this material would need to be justified and perhaps rethought, as it seems likely the oxidants could severely corrode an iron well.

8. The plan states that a one layer ground water model will be used to evaluate remedial alternatives. However, it should be noted that the utility of such a model is extremely limited and no convincing argument is made as to why such a simple approach will suffice. A multiple layer model should be used, and, prior to its construction, specific inputs and their sources should be presented to ensure that all parties reach an early consensus on the framework of the model.

9. The bench scale test for the use of Fenton's Reagent chemistry is cited as entailing the addition of reagents to a beaker of soil. Please note that this will not produce results that will allow the technology to be adequately evaluated. Bench testing of this technology requires a detailed work plan and a very controlled environment in order to accurately determine the effectiveness of the oxidant. The EPA has had much experience with the testing of this technology at other sites, and, among many other considerations, the process produces a significant amount of off gasses into which contaminants may partition. Conducting a bench test without carefully measuring all media involved will give incomplete and potentially misleading results.

For example, oxidation can react with in-situ metals such as iron and manganese, thus reducing the overall effectiveness on the targeted contaminants. The process can also create a sludge-like mass within the soil interstices, as well as mobilize in-situ metals. Therefore, the extent to which these could occur and be monitored should be addressed in a detailed bench testing work plan.

10. The Figure 2 flow chart appears to indicate that the bench testing of chemical oxidation will proceed in parallel with the evaluation of other technologies, however, the key decision point consisting of a rough cost estimate as to whether the technology would be too expensive, will be arrived at without making a comparison to the cost of the other tested technologies. Typically a feasibility study evaluates nine overall criteria, with the relative costs of remedial options being one of the criteria. Cost alone, as outlined in the figure, is not necessarily a limiting factor in itself. When taken together, the overall comparison and evaluation of these nine criteria provide the information needed to either recommend or eliminate certain technologies and remedial options. EPA guidance should be consulted and followed.

Please contact me at (609) 633-7261 if you have any questions.

Sincerely,

Gwen B Zervas

Gwen B. Zervas, P.E.
Case Manager
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